FOWADO
UNMANNED SYSTEMS

Fowado Unmanned Systems, LLC
333 N Falkenburg Rd, B212,
Tampa, Florida, 33619
Tel: 813-575-2160
josh@fowadous.com

May 20th, 2022

U.S. Department of Transportation
Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Petition for Exemption under Part 11 of the Federal Aviation Regulations from 14 CFR §§ 61.3(a)(1)(i); 91.7(a); 91.109(a); 91.119(c); 91.121; 91.151(b); 91.403(b); 91.405(a); 91.407(a)(1); 91.409(a)(1) and (2); 91.417(a) and (b); 137.19(c) and (d); 137.19(e)(2)(ii), (iii), and (v); 137.31(a) and (b); 137.33(a) and (b); 137.41(c), and 137.42.

A. SUMMARY:

On behalf of our client, Hillsborough County Mosquito Management Services, (hereafter known as HCMMS), and pursuant to Title 49 U.S.C. §§ 44701(f), 44807, Special authority for certain unmanned aircraft systems and 14 C.F.R. Part 11, HCMMS hereby petitions for an exemption from the listed Federal Aviation Regulations ("FAR's") to conduct agricultural aircraft operations.[1]

The proposed operation in this Petition for Exemption is similar in nature to that currently conducted by DroneXum, Exemption No. 18413A, except the aircraft in the current petition is the DJI Agras T-20 The T-20 has been previously approved by the FAA in Exemption No. 18821A, AgriSprayDrones, and is therefore also considered a summary grant.

As described more fully below in this petition, the requested exemption would permit the operation of the DJI AGRAS T-20 by HCMMS, under controlled conditions in predetermined airspace that is, A) Limited in scope B) Controlled as to access by mission essential personnel only. Grant of the requested exemption is based upon the concise direction expressed within Title 49 U.S.C. § 44807; the added authority granted by the Act, as amended; an equivalent level of safety regarding flight operations as expressed herein, and significant cost savings achieved by transitioning from traditional manned aerial resources to UASs. The petitioner respectfully requests that the FAA grant the requested exemption without delay. Petitioner will operate the DJI AGRAS T-20 while keeping the documents required by the regulations at the ground control station and immediately accessible to the Pilot in Command (PIC) and by modification of the required markings (registration number) of the UAS to be displayed on the fuselage

[1] "Agricultural aircraft operation means the operation of an aircraft for the purpose of (1) dispensing any economic poison, (2) dispensing any other substance intended for plant nourishment, soil treatment, propagation of plant life, or pest control, or (3) engaging in dispensing activities directly affecting agriculture, horticulture, or forest preservation, but not including the dispensing of live insects." 14 C.F.R. § 137.3.

Hillsborough County Mosquito Management Service (HCMMS) mission is to effectively and efficiently manage the risks from mosquito born disease in order to protect public health and improve quality of life in Hillsborough County. Aerial applications by manned aircraft of public health insecticides to control immature and adult mosquitoes are major components of HCMMS efforts to combat West Nile virus and other mosquito-borne diseases. The introduction of unmanned aircraft systems UAS has provided public mosquito services with an effective and efficient tool that can enhance mosquito detection and provide small, more precise aerial insecticide applications

HCMMS will be utilizing the T-20 for the spray application of liquid pesticides on hard to reach, remote mosquito breeding areas. HCMMS will also be using the T-20 for the application of granular products that are also insecticide related for combating mosquito borne diseases.

HCMMS is utilizing their experience in agriculture to expand into missions well suited for UAS/drones to reduce risk and improve efficiencies and value added. For all operations the T-20 has a maximum flight height of 100'. This allows for clearance of obstacles such as trees, buildings, power lines etc. Having said that, the primary flight height during operation will be 10' feet above the canopy of the crop being sprayed. (Typically, 18-25 feet elevation from the ground)

The major benefits to the public are; 1) reduction in injury to ground based applicators in challenging terrain, 2) reduced exposure to chemicals for applicators, 3) reduction in chemical drift compared to manned aircraft application, 4) reduced risk to flight crew compared to manned aircraft, 5) reduced exposure of surrounding beneficial vegetation, 6) more environmentally friendly application with reduced noise, 7) selective use of chemicals for a safer more targeted application, and 8) More efficient use of chemicals reducing cost to tax payers.

The UAS for the purposes of this petition is the DJI AGRAS T-20. DJI has an unparalleled presence in the UAS market with steadfast commitment to R&D, a culture of constant innovation and curiosity, and a focus on transforming complex technology into easy-to-use devices. Building on the ethos of "form follows function," DJI products combine advanced technology with dynamic designs. Established to produce DJI's innovative products safely and responsibly, the wholly owned subsidiary Shenzhen Dajiang Baiwang Technology Co., Ltd. is a high-tech manufacturing facility specializing in unmanned aerial vehicles.

In 2016, Dajiang Baiwang passed the ISO 9001:2015 Quality Management System Certification and in 2017 passed the SGS ISO 14001:2015 Environmental Management System Certification. DJI's offices can now be found in the United States, Germany, the Netherlands, Japan, South Korea, Beijing, Shanghai, and Hong Kong. As a privately owned and operated company, DJI focuses on its vision, supporting creative, commercial, and nonprofit applications of their technology.

Today, DJI products are redefining industries. Professionals in filmmaking, agriculture, conservation, search and rescue, energy infrastructure, and more customers trust DJI to bring new perspectives to their work and help them achieve feats safer, faster, and with greater efficiency than ever before. To date, sales of the DJI Agras T-20 have occurred in Japan and China for over a year with a combined total of 5,856,935 hours flown without any recorded incidents.

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1. QUICK REFERENCE SUMMARY

- The aircraft will be:
  - DJI Agras T20. The manufacturer's aircraft manuals are located here. https://www.dji.com/t20/downloads
    Note: this link contains the following information:
    ▪ Firmware update procedures (T20 User Manual v1.4 on page 56),
    ▪ Emergency procedures (Smart RTH, failsafe RTH, Low battery and Low Voltage in T20 User Manual v1.4 on pages 26-28)
    ▪ Manufacturer's manuals, and
    ▪ Preflight checklists (T20 User Manual v1.4 on pages 2 and 46).
- Petitioner is proposing to operate under the restrictions listed in Exemption # 18413A. We are requesting an exemption from one additional regulation (14 C.F.R. § 91.109(a)) that was not originally requested in Exemption 18413A but this regulation was exempted in Exemptions 18596, 18739, and 18594.

- In support of this Petition for Exemption, We are confidentially submitting the following information:

  - Training Program Manual
  - Safety Management System /Operations Manual
  - Maintenance Procedures Manual

All of these documents will be submitted on a confidential basis as the documents contain confidential commercial and proprietary information that Fowado Technology Group has not and will not share with others. The information contained in this material is not generally available to the public and is protected from release under the Freedom of Information Act, 5 U.S.C. § 552 et seq.

2. PETITIONER'S ADDRESS:

Hillsborough County Mosquito Management Services

ATTN: RONALD MONTGOMERY

6527 Eureka Springs Rd

Tampa, FL, 33610

3. REGULATIONS WHICH THE PETITIONER IS REQUESTING EXEMPTION FROM

- 14 C.F.R. § 61.3(a)(1)(i)
- 14 C.F.R. § 91.7(a)
- 14 C.F.R. § 91.109(a)
- 14 C.F.R. § 91.119(c)
- 14 C.F.R. § 91.121
- 14 C.F.R. § 91.151(b)
- 14 C.F.R. § 91.403(b)
- 14 C.F.R. § 91.405(a)
- 14 C.F.R. § 91.407(a)(1)
- 14 C.F.R. § 91.409(a)(1) and (2)
- 14 C.F.R. § 91.417(a) and (b)
- 14 C.F.R. § 137.19(c) and (d)
- 14 C.F.R. § 137.19(e)(2)(ii), (iii), and (v)
- 14 C.F.R. § 137.31(a) and (b)
- 14 C.F.R. § 137.33(a) and (b)
- 14 C.F.R. § 137.41(c)
- 14 C.F.R. § 137.42

4. EXTENT OF RELIEF THE PETITIONER IS SEEKING

The Petitioner proposes these restrictions and believes that these limitations provide an equivalent level of safety, if not greater, as the FAR's presently impose upon the Petitioner. These restrictions below were already previously granted in Exemption # 18413A. Each of the regulations we are petitioning for exemption from will be talked about in greater detail in another section in this petition. Things in bold are additions to what was originally in the restrictions of Exemption # 18413A.

1. Operations authorized by this grant of exemption include the **[DJI T20]** as described in the operating documents with a maximum take-off weight not to exceed **[105]** pounds, and are limited to agricultural aircraft operations. Additionally, the **[DJI T20]** aircraft must be listed on the operator's Title 14, Code of Federal Regulations (14 CFR) part 137 Letter of Authorization (LOA) prior to use in any part 137 operation.

2. This exemption does not excuse the operator from complying with part 375. If operations under this exemption involve the use of foreign civil aircraft, the operator must obtain a Foreign Aircraft Permit pursuant to § 375.41 before conducting any operations under this exemption. Application instructions are specified in §375.43

3. The **[DJI T20]** described in this exemption may not be operated at a groundspeed exceeding 30 miles per hour or at any speed greater than the maximum operating speed recommended by the aircraft manufacturer, whichever is lower.

4. All operations must be conducted in accordance with an Air Traffic Organization (ATO) issued Certificate of Authorization (COA). The exemption holder must apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the COA. If a conflict exists between the COA and this condition, the more restrictive provision will apply. The COA will also require the operator to request a Notice to Airmen (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to each operation. COA or other subsequently issued FAA authorization specifies an altitude restriction lower than 200 feet above ground level (AGL), operations under this exemption may not exceed 200 feet AGL. Altitude must be reported in feet AGL.

5. The pilot in command (PIC) must be designated before the flight and cannot transfer his or her designation for the duration of the flight. In all situations, the PIC is responsible for the safety of the operation. The PIC is also responsible for meeting all applicable conditions and limitations as prescribed in this exemption and ATO-issued COA and operating in accordance with the operating documents. The aircraft must be operated within visual line of sight (VLOS) of the PIC at all times. The PIC must be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate

6. The PIC may manipulate flight controls in the operation of no more than one unmanned aircraft at the same time. Proposed operation of more than one unmanned aircraft at the same time (by one PIC) requires a new petition or a petition to amend this exemption.

7. All operations must utilize the services of at least one or more visual observers (VO). The VO must be

trained in accordance with the Fowados Agriculture operator's training program. For purposes of this condition, a VO is someone: (1) who maintains effective communication with the PIC at all times; (2) who the PIC ensures is able to see the unmanned aircraft with human vision as described in Condition and Limitation No. 5; and (3) coordinates with the PIC to scan the airspace where the unmanned aircraft (UA) is operating for any potential collision hazard and maintain awareness of the position of the UA through direct visual observation. The aircraft must be operated within VLOS of both the PIC and VO at all times. The operation must be conducted with a dedicated VO who has no collateral duties and is not the PIC during the flight. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The VO must maintain visual sight of the aircraft at all times during flight operations without distraction. The PIC must ensure that the VO can perform the duties required of the VO. If either the PIC or a VO is unable to maintain VLOS with the UA during flight, the entire flight operation must be terminated as soon as practicable.

8. This exemption and all documents needed to operate the unmanned aircraft system (UAS) and conduct its operations in accordance with the Conditions and Limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. Operations Manual, Firmware Update Procedures, Emergency Procedures, Manufacturer's Manual for the **[The UAS described in restriction 1]**, Maintenance Procedures Manual, all Preflight Checklists, and this Exemption and any ATO-issued COA that applies to operations under this exemption must be accessible during all UAS operations that occur under this exemption and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the Conditions and Limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present the most current documents if it petitions for extension of or amendment to this grant of exemption. If the operator determines that any update or revision would affect the operator's ability to comply with any requirement of this exemption, then the operator must petition for an amendment to its grant of exemption. If questions arise regarding updates or revisions to the operating documents, the operator may contact the Flight Standards Service General Aviation and Commercial Division (AFS-800), 55 M Street, SE, 8th Floor, Zone 1, Washington, DC 20003. Telephone: 202-267- 1100, Email: 9-AFS-800- Correspondence@faa.gov.

9. Any aircraft that has undergone maintenance or alterations that affect the UAS operation or flight characteristics (e.g., replacement of a flight-critical component) must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and other personnel required to conduct the functional flight test (such as a mechanic or technician) and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property

10. The operator is responsible for maintaining and inspecting all aircraft to be used in the operation and ensuring that they are all in a condition for safe operation

11. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the aircraft is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, such as inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed, and the aircraft is found to be in a condition for safe flight.

12. The operator must follow the UAS manufacturers' operating limitations, maintenance instructions, service bulletins, overhaul, replacement, inspection, and life limit requirements for the **[The UAS described in restriction 1],** and its components. Each UAS operated under this exemption must comply with all manufacturers' safety bulletins. Maintenance must be performed by individuals who have been trained by the operator in proper techniques and procedures for these UAS. All maintenance must be recorded in the aircraft records including a brief description of the work performed, date of completion and the name of the person performing the work.

13. PIC certification: Under this exemption, a PIC must hold a current Part 107 remote pilot certificate.

14. The PIC must also hold at least a current FAA second-class airman medical certificate. The PIC may not conduct the operation if he or she knows or has reason to know of any medical condition that would make him or her unable to meet the requirements for at least a second class medical certificate, or is taking medication or receiving treatment for a medical condition that results in the PIC being unable to meet the requirements for at least a second-class medical certificate. The VO or any other direct participant may not participate in the operation if he or she knows or has reason to know of any physical or mental condition that would interfere with the safe operation of the aircraft.

15. The PIC must demonstrate the ability to safely operate the UAS in a manner consistent with how it will be operated under this exemption. The PIC must demonstrate the applicable knowledge and skills requirements for agricultural aircraft operations outlined in part 137, evasive and emergency maneuvers, and maintaining appropriate distances from persons, vessels, vehicles and structures before operating non-training, proficiency, or experience building flights under this exemption. Additionally, all PICs must satisfactorily complete the operator's training program requirements, the completion of which must be documented. Furthermore, the PIC must satisfactorily demonstrate his or her ability to respond appropriately to a lost-link occurrence as part of the knowledge and skill assessment that will occur in accordance with § 137.19(e). PIC qualification flight hours and currency may be logged in a manner consistent with § 61.51(b). However, time logged for UAS operations may not be recorded in the same columns or categories as time accrued during manned flight, and UAS flight time does not count toward total flight time required for any part 61 requirement.

16. UAS operations may not be conducted during night, as defined in § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Operations may not be conducted under special visual flight rules (SVFR).

17. The aircraft may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. For UAS operations where global positioning system (GPS) signal is necessary to safely operate the aircraft, the PIC must immediately recover/land the UA upon loss of GPS signal.

19. If the PIC loses command or control link, the aircraft must follow a pre-determined route to either reestablish link or immediately recover or land.

20. The PIC must abort the flight operation if unexpected circumstances or emergencies arise that could degrade the safety of persons or property. The PIC must terminate flight operations without causing undue hazard to persons or property in the air or on the ground.

21. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for each aircraft involved in the operation to conduct the intended operation with sufficient reserve such that in the event of an emergency, the PIC can land the aircraft in a known area without posing an undue risk to aircraft or people and property on the ground. In the alternative, if the manufacturer's manual, specifications, or other documents that apply to operation of the **[The UAS described in restriction 1]** recommend a specific volume of reserve power, the PIC must adhere to the manufacturer's recommendation, as long as it allows the aircraft to conduct the operation with sufficient reserve and maintain power to land the aircraft in a known area without presenting undue risks, should an emergency arise.

22. This exemption does not grant relief from the requirements concerning registration and marking of aircraft. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with part 47, and have identification (N-Number) markings in accordance with part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under §§ 91.9, 91.203, and 137.33 must be available to the PIC at the ground control station of the UAS any time any aircraft operates in accordance with this exemption. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All flight operations must be conducted at least 500 feet from all persons who are not directly participating in the operation, and from vessels, vehicles, and structures, unless when operating:

    a. *Over or near people directly participating in the operation of the UAS*. No person may operate the UAS directly over a human being unless that human being is directly participating in the operation of the UAS, to include the PIC, VO, and other personnel who are directly participating in the safe operation of the UA.

    b. *Near nonparticipating persons*. Except as provided in subsection (a) of this section, a UA may only be operated closer than 500 feet to a person when barriers or structures are present that sufficiently protect that person from the UA and/or debris or hazardous materials such as fuel or chemicals in the event of an accident. Under these conditions, the operator must ensure that the person remains under such protection for the duration of the operation. If a situation arises, in which the person leaves such protection and is within 500 feet of the UA, flight operations must cease immediately in a manner that does not cause undue hazard to persons.

    c. Closer than 500 feet from vessels, vehicles and structures. The UA may be operated closer than 500 feet, but not less than 100 feet, from vessels, vehicles, and structures under the following conditions:

    (1) The UAS is equipped with an active geo-fence boundary, set no closer than 100 feet from applicable waterways, roadways, or structures;

    (2) The PIC must have a minimum of 7 hours experience operating the specific make and model UAS authorized under this exemption, at least 3 hours of which must be acquired within the preceding 12

calendar months;

(3) The PIC must have a minimum of 25 hours experience as a PIC in dispensing agricultural materials or chemicals from a UA;

(4) The UA may not be operated at a groundspeed exceeding 15 miles per hour;

(5) The UA altitude may not exceed 20 feet AGL; and

(6) The PIC must make a safety assessment of the risk of operating closer than 500 feet from those objects and determine that it does not present an undue hazard.

d. Closer than 100 feet from vessels, vehicles and structures. The UA may operate closer than 100 feet from vessels, vehicles, and structures in accordance with the conditions listed in 27.c. (2) through (6) and the following additional conditions:

(1) The UAS is equipped with an active geo-fence boundary, set to avoid the applicable waterways, roadways, or structures; and

(2) The operator must obtain permission from a person with the legal authority over any vessels, vehicles or structures prior to conducting operations closer than 100 feet from those objects.

27. All operations shall be conducted from and over predetermined, uninhabited, segregated, private or controlled-access property as described in the operator's Operations Manual. The PIC must ensure the entire operational area will be controlled to reduce risk to persons and property on the ground, as well as other users of the National Airspace System (NAS). This area of operation will include a defined lateral and vertical area where the aircraft will operate and must be geo-fenced to prevent any lateral and vertical excursions by the operating aircraft. Safety procedures must be established for persons, property and applicable airspace within the area of operation. A briefing must be conducted regarding the planned UAS operations prior to operation at each location of operation in which the operator has not previously conducted agricultural aircraft operations. All personnel who will be performing duties within the boundaries of the area of operation must be present for this briefing. Additionally, all operations conducted under this exemption may only occur in areas of operation that have been physically examined by the operator prior to conducting agricultural aircraft operations and in accordance with the associated COA.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported within 24 hours as required by the applicable COA issued by the FAA ATO. Additionally, any incident or accident that occurs, or any flight operation that transgresses the lateral or vertical boundaries of the operational work area, must be reported to the Flight Standards District Office (FSDO) that holds the operator's part 137 certificate.

5. REASONS WHY THE PETITIONER IS SEEKING RELIEF FROM THE REGULATIONS AND WHY THE EXEMPTION WOULD PROVIDE AN EQUIVALENT LEVEL OF SAFETY

A. 14 C.F.R. § 61.3(a)(1)(i) - Part 61 Airmen Certificate Requirement

61.3(a) says, “Required pilot certificate for operating a civil aircraft of the United States. No person may serve as a required pilot flight crewmember of a civil aircraft of the United States, unless that person:(1) Has in the person's physical possession or readily accessible in the aircraft when exercising the privileges of that pilot certificate or authorization— (i) A pilot certificate issued under this part and in accordance with §61.19[.]” Unfortunately, 61.19 does not list a remote pilot certificate; therefore, to comply with 61.3 would require the pilot to obtain a Part 61 pilot certificate which would be burdensome.

Furthermore, this petition should be granted because the FAA in Exemption # 18009 (allowing a remote pilot certificate for a Part 91 drone spraying operations) stated, “Based on the specific requirements imposed by the remote pilot in command certificate, the petitioner’s hiring, training and testing protocols, the knowledge and skill requirements in § 137.19, the remote, controlled locations and extremely low altitude operating environment, the FAA concludes pilots who hold a remote pilot in command certificate can safely conduct the proposed operations.” Likewise, the HCMMS operators training manual, knowledge and skill requirement of 137.19, extremely low altitude operations, and the use of current remote pilot would provide an equivalent level of safety as the regulations.

B. 14 C.F.R. § 91.7(a) - Civil Aircraft Airworthiness

HCMMS is requesting relief from this regulation because the proposed unmanned aircraft have not been issued a standard airworthiness certificate. Section 91.7 paragraph (a) requires the PIC to only operate aircraft in an airworthy condition.

The FAA does not need to issue an airworthiness certificate for the proposed unmanned aircraft, but the DOT can under its authority in Section 44807 determine whether the proposed aircraft need airworthiness certificates or not.

The FAA has previously granted relief from 91.7(a) for 55 pound and heavier spraying unmanned aircraft (see Exemption # 18009) and determined that restrictions like our proposed restrictions provided an equivalent level of safety as the regulations. The proposed restrictions along with associated manuals that have been confidentially submitted will provide an equivalent level of safety as the regulations.

C. 14 C.F.R. § 91.109(a) Flight Instruction

This regulation has been exempted before in Exemptions 18596, 18739, and 18594. 91.109(a) says, “(a) No person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls.” Flight instruction is not defined in Part 91 or in Section 1.1. A plain reading of the regulation would require dual flight controls. This is a burdensome regulation and does not make sense when there are no people onboard the aircraft.

Flight instruction of students for initial and recurrent training is essential for maintaining safety in Part 137 operations. Purchasing another controller can be expensive and some aircraft controllers do not easily allow for a dual controller set up.

What also needs to be addressed is previous restrictions for other exemptions did not allow for flight instruction for compensation. For comparison, here is the exact language of restriction 16 from Exemption 18413A:

"16. All training operations must be conducted during dedicated training sessions and may not be conducted for compensation or hire. Furthermore, the PIC must operate the UA not closer than 500 feet to any nonparticipating person while conducting training operations."

This is not reasonable as numerous individuals would want to purchase flight instruction services from Part 137 operators, who have Chief Supervisors who are competent, and the operators are in business to make money, not do pro-bono flight instruction. It is also not in the interest of safety to completely cut off professional flight instruction services and would leave students to figure things out for themselves through some self-taught method of flying in a field by themselves. On one hand, the FAA is trying to protect members of the public from inexperienced students, but on the other hand, the FAA just made things less safe by prohibiting professional flight instruction. An equivalent level of safety as the regulations can be achieved by following our proposed restriction 16 which says:

"16. All training operations must be conducted during dedicated training sessions. **[Training operations cannot be on the job training while applying material for a customer. During training operations, the operator may charge for ground and flight instruction.]** Furthermore, the PIC must operate the UA not closer than 500 feet to any nonparticipating person while conducting training operations."

Based upon the proposed restriction, an equivalent level of safety can be achieved as the regulations.

D. 14 C.F.R. § 91.119(c) – Minimum Safe Altitudes

91.119(c) says, "An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure." This would be burdensome to not allow the operation of the aircraft within 500ft of the crew. An equivalent level of safety can be provided by requiring the aircraft to maintain a safe distance from people and property according to proposed restriction 27. Furthermore, proposed restriction 27 has been determined by the FAA to be safe in Exemption # 18413A for 55 pound and heavier drone spraying operations. Based upon the proposed restriction and the submitted supporting documents, an equivalent level of safety can be achieved.

E. 14 C.F.R. § 91.121 - Altimeter Settings

Section 91.121 requires each person operating an aircraft without a radio to maintain cruising altitude by reference to a barometric altimeter that is set "to the elevation of the departure airport or an appropriate altimeter setting available before departure." In Exemption 18009, the FAA determined that because of the "limited altitude of the" drone spraying operations, using GPS instead of a barometric altimeter is considered safe. Based upon the proposed restriction and the submitted supporting documents, an equivalent level of safety can be achieved.

F. 14 C.F.R. § 91.151(b) - Fuel requirements for flight in VFR conditions.

91.151(b) says, “No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 30 minutes.” It would be burdensome to comply with this regulation seeing that there are no people onboard, the operational environment, and the small size of the aircraft. The proposed restriction 22 is identical to the restriction in Exemption 18413A, except for the aircraft, and the FAA previously determined this to be an equivalent level of safety as 91.151(b).

G. 14 C.F.R. § 91.403(b); § 91.405 (a); § 91.407 (a) (1); § 91.409 (a); § 91.417(a) & (b): Maintenance Inspections

Section 91.403(b) says, “No person may perform maintenance, preventive maintenance, or alterations on an aircraft other than as prescribed in this subpart and other applicable regulations, including part 43 of this chapter.” Section 91.405 paragraph (a) requires that an aircraft operator or owner “shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter” and maintain the aircraft in compliance with Part 43. Section 91.407 paragraph (a)(1) prohibits, in pertinent part, any person from operating an aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless it has been approved for return to service by a person authorized under § 43.7 of the same chapter. Section 91.409 paragraph (a)(1) requires that the aircraft cannot be operated unless it has had an annual inspection. Section 91.417 paragraphs (a) and (b) requires the owner/operator to keep a list of records of inspections required by the other regulations.

These regulations primarily should be viewed as a whole in that they are requiring the owner/operator to maintain/repair the “Aircraft having a U.S. airworthiness certificate [,]”2 while maintaining records of this, using Part 43 and certified individuals. While this makes sense for manned aircraft that are certified, it does not always make sense for unmanned aircraft which do not have airworthiness certificates.

The aircraft manufacturer and operators are best positioned for determining the airworthiness of the aircraft. HCMMS proposes that the supporting operating documents confidentially submitted and proposed restrictions will provide an equivalent level of safety as the regulations listed.

Section 91.403 paragraph (b) says, “No person may perform maintenance, preventive maintenance, or alterations on an aircraft other than as prescribed in this subpart and other applicable regulations, including part 43 of this chapter.” It logically follows that if an exemption from 91.405 (a); 91.407 (a) (1); 91.409 (a)(1); 91.417(a) & (b) is granted, 91.403(b) which references all of these regulations, because they are in Subpart E of Part 91, it must be exempted also; otherwise, 91.403(b) works against the exemption and revives the restrictions just exempted. The FAA granted an exemption from this regulation in Exemption numbers 18413A and 18596.

H. 14 C.F.R. §§ 137.19(c), 137.41(c) Pilot in command.

Section 137.19 paragraph (c) says, “Commercial operator—pilots. The applicant must have available the services of at least one person who holds a current U.S. commercial or airline transport pilot certificate and who is properly rated for the aircraft to be used. The applicant himself may be the person available.”

These regulations are extremely burdensome and unnecessary. As found in the previously granted exemptions (e.g. Exemption # 18413A), an equivalent level of safety of the regulations can be achieved by requiring a remote pilot certificate, operations to be done in accord with Part 91 & 137, an agricultural aircraft operations certification be obtained prior to operations, and the proposed restrictions in this exemption.

I. 14 C.F.R. § 137.19(d) Aircraft and 137.31(a) Aircraft Requirements.

Section 137.19 paragraph (d) says, “The applicant must have at least one certificated and airworthy aircraft, equipped for agricultural operation.” The proposed unmanned aircraft do not have any aircraft certification and it would be extremely burdensome to obtain certification for the aircraft. If 137.19(d) is exempted, it follows that 137.31(a) must logically be exempted since it requires meeting the requirements in 137.19(d).

An equivalent level of safety can be achieved by operating according to the proposed restrictions which were already approved in FAA in Exemption #18413A as providing an equivalent level of safety of 137.19(d). The requirements contained in the manuals, the requirement in Part 91 for the pilot to conduct pre-flight inspections of the aircraft, and the requirement of the agricultural aircraft operator certificate be obtained prior to flight will be in total sufficient for determining the airworthiness of the aircraft which provides an equivalent level of safety as the regulations for agricultural aircraft operations. Furthermore, because these UA are very limited in size and will carry a small chemical payload and operate only in restricted areas for limited periods of time, the risk to the public is lower. Moreover, the Petitioner is the one best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety as the regulations.

J. 14 C.F.R. § 137.19(e)(2)(ii)-(v) Skills Test

Section 137.19 paragraphs (e)(2)(ii)-(v) are unnecessary and not applicable for unmanned aircraft. As the FAA stated in Exemption 17261, “the FAA has determined that demonstration of the skills described in these paragraphs is not necessary because they are not compatible or applicable to” agricultural aircraft operations with multi-rotor unmanned aircraft. Furthermore, in Exemption 18009 the FAA stated, “Granting relief from a demonstration of the skills described in § 137.19(e)(2)(ii), (iii), and (v) does not adversely impact safety because the operations . . . under this exemption would not include any exercise of those maneuvers.”

An equivalent level of safety can be obtained by requiring the pilot to have a valid remote pilot certificate, requiring the Petitioner to obtain prior to operations an agricultural aircraft operations certificate, and requiring that operations must be done under the proposed restrictions of this petition.

K. 14 C.F.R. § 137.31(b), and 137.42. Safety Belts and Shoulder Harnesses.

Section 137.31(b) says that the unmanned aircraft must be “equipped with a suitable and properly installed shoulder harness for use by each pilot.” Section 137.42 says, “No person may operate an aircraft in operations required to be conducted under part 137 without a safety belt and shoulder harness properly secured about that person except that the shoulder harness need not be fastened if that person would be unable to perform required duties with the shoulder harness fastened.”

This regulation is designed to protect people on board the aircraft. Since there are no people on board, whether we follow it or not, the impact on safety is the same. However, because the law requires it, we require an exemption from these regulations. Therefore, an equivalent level of safety can be achieved by flying under the proposed restrictions herein. Consistent with previous exemptions (e.g. Exemption No. 18009) from the FAA, an equivalent level of safety can be achieved operating under the proposed restrictions above.

L. 14 C.F.R. § 137.33 Carrying of certificate

Section 137.33 paragraph (a) requires the agricultural aircraft operator certificate be carried on the aircraft. Additionally, paragraph (b) requires the airworthiness certificates to be available for inspection at the base.

A similar situation was addressed in the FAA legal opinion letter of Mark Bury to John Duncan on August 8, 2014 where the FAA general counsel's office answered whether registration and airworthiness documents must be carried aboard an unmanned aircraft. Mr. Bury said, "we find that the intent of these regulations is met if the pilot of the unmanned aircraft has access to these documents at the control station from which he or she is operating the aircraft."

Likewise, the Petitioner here proposes to keep the agricultural aircraft operator certificate and registration all at the ground station. These documents can be available for inspection by the FAA or law enforcement. This all provides an equivalent level of safety as the regulations.

Additionally, the Petitioner needs relief from paragraph (b) because the unmanned aircraft do not have airworthiness certificates and it would be extremely burdensome to acquire an airworthiness certificate in order to comply with this paragraph of the regulation. An equivalent level of safety can be reached by requiring the remote pilot to obtain an agricultural aircraft operator certificate prior to operations and conducting pre-flight inspections.

M. 14 C.F.R. § 137.41(c) Pilot in command.

Section 137.41 paragraph (c) says, "No person may act as pilot in command of an aircraft unless he holds a pilot certificate and rating prescribed by §137.19 (b) or (c), as appropriate to the type of operation conducted. In addition, he must demonstrate to the holder of the Agricultural Aircraft Operator Certificate conducting the operation that he has met the knowledge and skill requirements of §137.19(e). If the holder of that certificate has designated a person under §137.19(e) to supervise his agricultural aircraft operations the demonstration must be made to the person so designated."

An exemption is needed from this regulation based upon the same reasons listed above for Section 137.19 (c) and for Section 137.19(e)(2)(ii)-(v). An equivalent level of safety can be provided by the proposed restrictions listed herein that have already been determined by the FAA in Exemption 18413A to provide an equivalent level of safety as the regulations. Additionally, all of the pilots in command will have had to obtain a remote pilot certificate and have passed company training.

6. REASONS WHY GRANTING THIS PETITION WOULD BE IN THEPUBLIC INTEREST

Aerial applications by manned aircraft of public health insecticides to control immature and adult mosquitoes are major components of HCMMS efforts to combat West Nile virus and other mosquito-borne diseases. The emergence of UAS technology presents HCMMS with a more cost-effective and precision-based tool that is beneficial to conduct enhanced mosquito detection and public health pesticide applications.

If the Petitioner does not have the option of using the Petitioner's UA, the only other way to spray some of the inaccessible, dangerous, unstable, treacherous ground areas the Petitioner seeks is by using manned aircraft which pose a danger to the pilot as well as individuals on the ground. There are no pilots on board the UA and due to the small size of the UA, there is less risk posed to the public on the ground in case of an emergency. Additionally, the UA has multiple motors while most manned aircraft have only one engine; thus, there is some motor redundancy for some UA in case of a motor malfunction.

Manned airplanes and helicopters produce great amounts of noise pollution disturbing the quiet enjoyment of private property of the public on the ground. UA are much quieter and will not disrupt the public as much as manned aircraft; thus, the public will benefit from a reduction in noise pollution.

In addition to the noise pollution reduction, engine or turbine powered aircraft produce exhaust which affects the environment, while the UA of the Petitioner are electric and do not produce any emission. The environment and the public health are benefited by the use of UA.

Lastly, the UA will be operated at lower altitudes than most manned aircraft. This vertical separation greatly reduces the chance of a mid-air collision and the resulting catastrophic carnage on the ground. Thus, the public benefits by having less risk from mid-air collision wreckage impact.

Other benefits of UAS include the following:

- Zero footprint on marsh land and sensitive lands.
- Reduced drift by using directed aerial spray applications.
- Significant employee safety risk reduction.
- Reduced noise and fuel emissions; and
- Reduced costs of equipment and labor.

7. FEDERAL REGISTER SUMMARY

As required by 14 C.F.R. Part 11, below is provided a summary of the petition to be published in the Federal Register should it be determined that publishing is needed.

Hillsborough County Mosquito Management Services is seeking an exemption from the following rules:

Petition for Exemption under Part 11 of the Federal Aviation Regulations from 14 CFR §§ 61.3(a)(1)(i); 91.7(a); 91.109(a); 91.119(c); 91.121; 91.151(b); 91.403(b); 91.405(a); 91.407(a)(1); 91.409(a)(1) and (2); 91.417(a) and (b); 137.19(c) and (d); 137.19(e)(2)(ii), (iii), and (v); 137.31(a) and (b); 137.33(a) and (b); 137.41(c), and 137.42 to fly unmanned aircraft weighing over 55 pounds for agricultural aircraft operations.

This exemption is needed because the listed regulations are extremely burdensome to operate under while conducting agricultural aircraft operations under the Federal Aviation Regulations. The operations of the unmanned aircraft ("UA") will provide a far safer alternative than using a jet or piston powered aircraft because small batteries will be used instead of large amounts of highly flammable fuel, the UA can be transported to the operation location via ground vehicle as opposed to ferrying in the air, the UA will be operated at altitudes far below manned aircraft, and the UA will use clean electricity for power as opposed to 100LL which has the by-product of small amounts of lead being released into the atmosphere for the public to breath. The proposed restrictions contained in the petition and manufacturer's manuals will provide an equivalent level of safety as the regulations.

8. OPERATING DOCUMENTS

HCMMS will operate only within the limitations above and any limitations listed in the manuals. Additionally, the pilots will all go through Fowado company training using the training manual and operate under the company's flight operations manual. The limitations above, from the previously granted exemption (# 18413A), will be followed if there is a conflict with any of the manuals.

9. STATUTORY AUTHORITY TO GRANT THIS PETITION

The Federal Aviation Act gives the FAA the authority to grant exemptions. "The Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any sections 44702-44716 of this title if the Administrator finds the exemption in the public interest."3 The Secretary of Transportation has authority under 49 U.S.C. Section 44807 to determine the unmanned aircraft do not require an airworthiness certificate.

10. CONSLUSION

The operation of HCMMS using the unmanned aircraft for agricultural aircraft operations, conducted under the proposed restrictions outlined above, will provide an equivalent level of safety as the burdensome regulations; therefore, this petition should be granted without delay. If I can be of any assistance, please do not hesitate to contact me at my email josh@fowadous.com

Sincerely,

Joshua Ortiz.